

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 March 2001 (22.03.2001)

PCT

(10) International Publication Number
WO 01/20107 A2

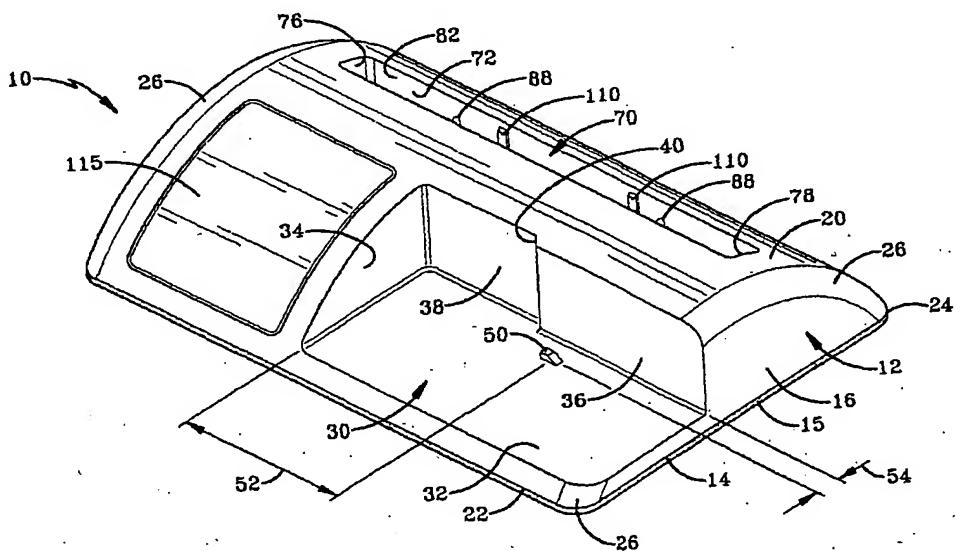
- (51) International Patent Classification⁷: E05B (74) Agents: ZOLLINGER, Fred, H., III et al.; Sand & Sebolt, Aston Park Professional Centre, Suite 194, 4801 Dressler Road, NW, Canton, OH 44718 (US).
- (21) International Application Number: PCT/US00/25330
- (22) International Filing Date:
15 September 2000 (15.09.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/153,967 15 September 1999 (15.09.1999) US
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— Without international search report and to be republished upon receipt of that report.

[Continued on next page]

(54) Title: MAGNETIC AND MECHANICAL UNIVERSAL KEY FOR SECURITY CONTAINERS



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(57) Abstract: The universal opener includes at least first and second openers. A third opener may be selectively attached to the body in a dock. The first opener includes a bottom wall and a rear wall. The first opener includes a detent extending up from the bottom wall. The second opener is disposed in a slot in the body. The second opener includes a pair of pins configured to interact with the locking mechanisms on a media security container. The second opener also includes a spring-loaded grabber that holds the container when the container is being unlocked. The universal opener further includes an interlock system that selectively prevents each of the openers from being used when the system is moved to the locked position.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

**MAGNETIC AND MECHANICAL UNIVERSAL KEY
FOR SECURITY CONTAINERS**

CROSS REFERENCE TO RELATED APPLICATION

5 This application claims priority from United States Provisional Application serial no. 60/153,967 filed September 15, 1999; the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

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Technical Field

The present invention relates to a device for opening security packages. More particularly, the present invention relates to a device for easily opening security packages such as those used to prevent theft of audio cassettes, video cassettes, 15 compact discs, video games, DVDs, or other small recorded media that may be easily stolen from a retail store. Specifically, the present invention relates to a magnetic and mechanical universal key capable of opening a variety of security packages of different constructions that are used to securely display audio cassettes, video cassettes, compact discs, video games, DVDs, and other small recorded media so 20 as to prevent or defer the theft thereof.

Background Information

In recent years, the demand by consumers for recorded media has grown immensely. Specifically, the relatively large vinyl records and 8 track tapes of 25 previous generations have been replaced by much smaller audio cassettes and compact discs that possess significantly better sound quality and may be played by portable players. In addition, today's overall demand for recorded media and specifically audio cassettes and compact discs has far surpassed demands for the larger types of recorded media. Furthermore, video cassettes and video game

cartridges have also become increasingly popular. All of these new forms of recorded media have become very successful in the marketplace and numerous retail stores are devoted solely to selling these types of recorded media.

Unfortunately, along with the success in the marketplace, shoplifting and other forms of theft have become an increasing problem. The small size of these newer forms of recorded media has significantly added to the risk of shoplifting. Specifically, compact discs are very thin and audio cassettes and video game cartridges are very small. As a result, all of these are susceptible to unauthorized removal, particularly since they can be easily fit in a coat pocket or other hidden areas within or under a clothing article or in a purse or shopping bag. For these reasons, there has been a need to secure small and relatively expensive audio and video recorded media within security packages that inhibit shoplifting and other theft. The security packages typically add to the overall size of the recorded media items and may contain an electronic article surveillance device. Numerous devices have been invented for this purpose as exemplified in U.S. Patent Nos. 5,215,188, 5,460,266, 5,205,401, 5,390,515, D 333,563, 5,221,283, 4,760,914, and 4,865,190. Each of these security packages has been ideally suited for the purpose of deterring shoplifting of an item of recorded media. In addition, many of these devices are reusable and have proven to be an effective and inexpensive way of preventing the shoplifting of various recorded media including audio cassettes, video cassettes, compact discs, and video game cartridges.

One problem with the proliferation of such security devices is the need for an individual and separate unlocking mechanism for each type of security device. The relatively large number of keys are difficult to store and may be difficult to find during a retail sale when the clerk is pressed for time. It has also been found that these key elements are susceptible to breakage and loss. Some keys are also difficult to use. Another problem with some prior art keys is that they are relatively small and may be stolen and subsequently concealed by a shoplifter to unlock a security device and steal the recorded media. In response to these concerns, the art has developed

openers and keys that are typically more bulky and substantial than the previous keys. These openers may be mounted on a checkout counter such that they may unlock the specific security package for which they are designed.

These openers are, however, typically each designed and configured so as to 5 be capable of opening only one specific type of security package. Therefore, it is still a requirement to have multiple keys or openers available for the clerk throughout the store and at the checkout counters so as to provide access to all of the various recorded media stored in the various security packages. A need therefore exists for a universal key or opener that is capable of opening various types of security 10 packages for a wide array of different recorded media including audio cassettes, video cassettes, compact discs, video game cartridges, DVDs, and other recorded media.

SUMMARY OF THE INVENTION

15 In view of the foregoing, objectives of the invention include providing an improved unlocking device for security packages.

A further objective is to provide a device for rapidly, easily, and effectively opening security packages of a reusable nature that are used in retail outlets to protect various types of recorded media from theft.

20 Yet a further objective is to provide an opener capable of opening security packages of different sizes, different contents, and/or differing locking mechanisms.

Still a further objective is to provide an opening device that is relatively inexpensive.

Another objective of the present invention is to provide an opener for opening 25 security packages where the opener is easy to use.

Yet another objective of the present invention is to provide an opening mechanism that can be part of an opening body securable to a fixed counter or other structure, or part of a handheld unit.

An additional objective of the present invention is to provide an opening mechanism that may be used to open a magnetic security device.

Yet an additional objective of the present invention is to provide an opening mechanism that is modular in design such that other types of keys may be selectively added to the device when required.

Another objective of the present invention is to provide an opening mechanism that includes at least one opener that provides a device that helps separate the lock from the storage container as the storage container is being unlocked and opened.

Another objective of the present invention is to provide an opening mechanism that includes an interlock device that allows a single key to be used to lock all of the opening devices in a single step.

The invention provides a key for opening at least two different types of security devices; the key including a body defining a slot; the body further defining a bottom wall and a rear wall extending upwardly from the bottom wall; a first opener being defined by the bottom and rear wall of the body; the first opener including a detent extending up from the bottom wall; and a second opener carried by the body; the second opener being at least partially disposed in the slot; and the second opener including a pair of spaced unlocking pins disposed in the slot.

Other objectives and advantages of the invention are achieved by a key for opening at least two different types of security devices; the key including a body defining a slot; the body including a front wall and a rear wall that define a portion of the slot; the body further defining a bottom wall and a rear wall extending upwardly from the bottom wall; a first opener being defined by the bottom and rear wall of the body; the first opener including a detent extending up from the bottom wall; the first opener further including a first magnet disposed adjacent the detent; the rear wall being disposed intermediate the first magnet and the detent; a second opener carried by the body; the second opener being at least partially disposed in the slot; the second opener including a pair of spaced unlocking pins disposed in the slot; the second opener further including a second magnet disposed adjacent each of the

unlocking pins; and one of the front and rear walls defining a portion of the slot being disposed intermediate the unlocking pins and the second magnet.

Further objectives and advantages of the invention are achieved by a key for opening at least two different types of security devices; the key including a body; the body further defining a bottom wall and a rear wall extending upwardly from the bottom wall; a first opener being defined by the bottom and rear wall of the body; the first opener including a detent extending up from the bottom wall; the first opener further including a first magnet disposed adjacent the detent; the rear wall being disposed intermediate the first magnet and the detent; a second opener carried by the body; the second opener including a pair of spaced unlocking pins; the second opener further including a second magnet disposed adjacent each of the unlocking pins.

BRIEF DESCRIPTION OF THE DRAWINGS

15 Preferred embodiments of the invention, illustrative of the best modes in which applicants have contemplated applying the principles of the invention, are set forth in the following description and are shown in the drawings and are particularly and distinctly pointed out and set forth in the appended claims.

FIG. 1 is a perspective view of a first embodiment of the opener of the present
20 invention;

FIG. 2 is a top plan view of the universal opener of FIG. 1 being used to unlock a first type of security device having a first type of locking mechanism;

FIG. 3 is a sectional view taken along line 3-3 of FIG. 2;

FIG. 4 is a perspective view of a second embodiment of the universal opener
25 of the present invention;

FIG. 5 is an exploded perspective view of a third embodiment of the opener of the present invention;

FIG. 6 is a sectional view taken along line 6-6 of FIG. 4;

FIG. 7 is an exploded perspective view of a fourth embodiment of the present invention;

FIG. 8 is a sectional view similar to FIG. 6 for the fourth embodiment of the present invention;

5 FIG. 9 is a sectional view of the universal opener depicting the second opener in a first position of opening a second type of locking mechanism;

FIG. 10 is a view substantially similar to FIG. 9 showing the second opener and locking mechanism in a second position;

10 FIG. 11 is a view substantially similar to FIG. 9 showing the second opener and locking mechanism in a third position;

FIG. 12 is a view substantially similar to FIG. 9 showing the second opener and locking mechanism in a fourth position;

FIG. 13 is a top plan view of a fifth embodiment of the present invention;

FIG. 14 is a right end view taken along line 14-14 of FIG. 13;

15 FIG. 15 is a sectional view taken along line 15-15 of FIG. 13;

FIG. 16 is a sectional view taken along line 16-16 of FIG. 13;

FIG. 17 is a view substantially similar to FIG. 16 showing a different opener module installed in the universal opener;

20 FIG. 18 is a bottom plan view of the universal opener with the bottom plate, unlocking mechanisms, and interlock mechanisms substantially removed;

FIG. 19 is a view similar to FIG. 18 showing the rotor and the first interlock mechanism in the locked position;

FIG. 20 is a view similar to FIGS. 18 and 19 showing the housing for the second opener in position;

25 FIG. 21 is a sectional view taken along line 21-21 of FIG. 13 showing the second interlock mechanism in the locked position;

FIG. 22 is a top plan view of the portion of the universal opener where the interlock key is located and depicting the interlock indicator;

FIG. 23 is a bottom plan view of the first interlock mechanism;

FIG. 24 is a top plan view of the first interlock mechanism showing the two color plates of the interlock indicator;

FIG. 25 is a bottom plan view of the universal opener with the bottom plate removed showing the movement of the first and second interlock mechanisms from 5 the locked position to the unlocked position; and

FIG. 26 is a view similar to view 21 showing the second interlock mechanism in the unlocked position.

Similar numerals refer to similar parts throughout the specification.

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DESCRIPTION OF THE PREFERRED EMBODIMENTS

The improved magnetic and mechanical universal opener or key of the present invention is shown in several embodiments, the first of which is indicated generally by the numeral 10 and is shown particularly in FIGS. 1-3. Universal key 10 has a main housing or body 12 that includes a base 14 upon which key 10 is supported. Base 14 may be connected to a gripping material 15 that provides traction to key 10. Body 12 further includes a first end wall 16 and a second end wall 18 that extend upwardly from base 14. A top wall 20 extends between end walls 16 and 18 and is curved such that it connects with base 14 along a front edge 22 and a rear edge 24. In other embodiments of the present invention, top wall 20 may be connected to base 14 with a front wall and a rear wall. Top wall 20 is connected to each end wall 16 and 18 by a rounded corner 26. In other embodiments of the present invention, top wall 20 may connect to each end wall 16 and 18 at a substantially right angle.

In accordance with one of the objectives of the present invention, key 10 includes multiple openers with a first opener being generally indicated by the numeral 25 30. First opener 30 includes a bottom wall 32 that may be integrally formed with body 12 of key 10. Bottom wall 32 may be substantially parallel to base 14. Bottom wall 32 is disposed above base 14 as may be seen in FIG. 3. First opener 30 further includes a sidewall 34 that connects bottom wall 32 to top wall 20. In the embodiment of the invention depicted in the drawings, sidewall 34 is disposed between one-third

and one-half of the distance between end walls 16 and 18. Bottom wall 32 and end wall 34 also extend only about one-third to one-half of the distance between front edge 22 and rear edge 24. First opener 30 further includes a rear wall 36 that extends substantially vertically upward from the rear edge of bottom wall 32 to 5 connect bottom wall 32 to top wall 20.

In accordance with another objective of the invention, rear wall 36 includes an offset wall 38 that is offset rearwardly from rear wall 36 by an angled wall 40. Offset wall 38 of rear wall 36 is sized to receive a protruding hinge 42 on a first type of storage container 44 for storing an item of recorded media. First type of storage 10 container 44 is typically used to securely store larger items of recorded media such as video cassettes, double compact discs, game cartridges, multiple audio cassettes, and the like. First storage container 44 contains a unique first locking mechanism. Container 44 includes hinges 42 that connect a lid to a base. Each hinge 42 protrudes outwardly from the rear surface 46 of storage container 44 a given distance 15 that is indicated by the dimension line labeled with the numeral 48 in FIG. 2. Offset wall 38 of rear wall 36 is offset rearwardly from rear wall 36 a distance substantially equal to or slightly greater than dimension 48. Angled wall 40 may be angled at a substantially 45 degree angle so as to provide a smooth transition between offset wall 38 and rear wall 36. Offset wall 38 thus provides space to receive hinge 42 on 20 storage container 44 when storage container 44 is unlocked by a first opener 30. Offset wall 38 is also configured to help align storage container 44 when storage container 44 is being unlocked by first opener 30.

First opener 30 further includes a detent 50 that protrudes upwardly from bottom wall 32. Detent 50 is disposed at a first distance, indicated generally by the 25 dimension line labeled by the numeral 52 from sidewall 34 and at a second distance, indicated generally by the dimension line labeled with the numeral 54, from rear wall 36. First dimension 52 and second dimension 54 are configured such that detent 50 properly engages the first type of locking mechanism of storage container 44 when a first sidewall 56 of storage container 44 abuts sidewall 34 and when rear wall 46

abuts rear wall 36 of opener 30. In this position, hinge 42 is disposed in the notch formed by offset wall 38 and angled wall 40 and may be touching offset wall 38. The configuration of sidewall 34, offset wall 38, angled wall 40, rear wall 36 and the location of detent 50 ensure easy and quick alignment of storage container 44 within 5 first opener 30 such that it may be quickly and easily unlocked. As may be seen in FIG. 2, storage container 44 is placed over detent 50 in first opener 30 and then moved to the right as indicated by the arrows labeled by the numeral 60 to the position indicated by the phantom lines labeled with the numeral 62. When storage container 44 has reached the position indicated by phantom line 62, hinge 42 has not 10 yet contacted angled wall 40 and storage container 44 is unlocked. Storage container 44 may then be removed from first opener 30 and the contents of storage container 44 removed and sold to the consumer. In one embodiment of the invention, dimension 52 is between two and one-quarter and three inches and may be specifically two and one-half to two and five-eighths inch. Dimension 54 is between 15 one-quarter and three-quarter inches and may be specifically between three-eighths and five-eighths of an inch.

In accordance with one of the objectives of the invention, key 10 includes a second opener that is indicated generally by the numeral 70. Second opener 70 is adapted to cooperate with a second type of storage container to open the second 20 type of locking mechanism of the storage container. Second opener 70 is disposed in a slot 72 formed in body 12 of key 10. Slot 72 includes a bottom wall 74, a first sidewall 76, a second sidewall 78, a front wall 80, and a rear wall 82. Slot 72 has a length that extends over the majority of the length of key 10. The length of slot 72 is larger than the width of the security package 84 such that security package 84 holding 25 an item of recorded media 86 may fit within slot 72 as shown in FIGS. 9-12. For instance, slot 72 may be five and one-half to six and one-half inches wide and may be specifically five and three-quarter to six inches wide. Similarly, slot 72 has a width that allows security package 84 to fit within slot 72. The depth of slot 72 is sufficient and sized to allow the second locking mechanism of security package 84 to fit within

slot 72 to engage the active elements of second opener 70. FIGS. 9-12 show that an area, indicated by the numeral 89 is provided below slot 72 so that the depth of slot 72 may be adjusted during manufacture so that slot 72 may be sized for specific security devices 84.

Second opener 70 includes at least a pair of pins 88 that extend substantially vertically upwardly from bottom wall 74 of slot 72. Pins 88 are spaced apart along the length of slot 72 a distance equal to the openings in security package 84 that receive pins 88 when security package 84 is being unlocked. In one embodiment of the present invention, pins 88 are spaced apart by three and one-half to four and one-half 10 inches and more specifically three and three-quarter to four inches. Pins 88 are driven into security package 84 when security package 84 is pressed down into slot 72. Pins 88 function to deflect a tab in security package 84 to move the tab to an unlocked position. In some types of security packages 84, a metal clip must also be moved to an unlocked position in addition to the mechanically actuated levers. A pair 15 of magnets 90 are thus provided as part of second opener 70 to urge the magnetically actuated levers of security package 84 to an unlocked position when security package 84 is fully disposed in slot 72. Magnets 90 are each supported by a support wall 92 and are positioned behind rear wall 82 of slot 72. Each magnet 90 is strong enough to produce a magnetic field that passes through rear wall 82 and the rear wall 94 of 20 security package 84.

Second opener 70 further includes a pair of grabbers 96 that extend into slot 72 through front wall 80. Each grabber 96 includes a rounded head 98 that is biased into slot 72 by a spring 100. Head 98 and spring 100 are received in an opening 102 formed in front wall 80 by a substantially cylindrical sidewall 104 and a substantially 25 circular end wall 106. Spring 100 is sized and configured to allow head 98 to be pushed back into opening 102 upon application of a force such as the force delivered to head 98 by security package 84 when security package 84 is pressed down into slot 72. In accordance with one of the objects of the present invention, spring 100 and rounded head 98 are configured to engage security package 84 and provide a

retention force when security package 84 is pulled out of slot 72 so as to complete the unlocking of security package 84 by second opener 70. In one embodiment of the present invention, grabbers 96 are spaced apart one and three-quarter to two and one-quarter inches.

5 Second opener 70 further includes a pair of guide rails 108 that extend into slot 72 from front wall 80 and another pair of guide rails 110 that extend into slot 72 from rear wall 82. Guide rails 108 and 110 cooperate with slots formed on security package 84 to properly position security package 84 within slot 72 as security package 84 is being inserted into slot 72.

10 The operation of second opener 70 is depicted in FIGS. 9-12. The initial position of the second type of security package 84 with respect to second opener 70 is depicted in FIG. 9 with security package 84 aligned with slot 72 of second opener 70. Guide rails 108 and 110 prevent the improper insertion of security package 84 into slot 72. Furthermore, pins 88 prevent security package 84 from being improperly inserted into slot 72. The second position is depicted in FIG. 10 with security package 84 fully inserted into slot 72 of second opener 70. In this position, pins 88 are fully disposed within security package 84 and function to deflect the corresponding tabs in security package 84 to move the tabs to the unlocked position. Once the tabs of security package 84 are in the unlocked position, the magnetically actuated levers of 15 security package 84 are moved to the unlocked position by magnets 90. Security package 84 is thus unlocked. In order to maintain its unlocked configuration, the lock plate 114 must be pulled back while pins 88 are maintained in position. Grabbers 96 function to maintain lock plate 114 in position with respect to pins 88 while the remaining portions of security package 84 are removed from opener 10. This is 20 depicted in FIG. 11 with lock plate 114 pulled back from security package 84. Once lock plate 114 is fully pulled back, it engages a catch on security package 84 to prevent its further movement. Further movement by security package 84 creates a force that releases the engagement of grabbers 96 from lock plate 114 and releases the entire security package 84 from opener 10 as depicted in FIG. 12.

The first embodiment of opener 10 further includes a dock 122 that is disposed adjacent first opener 30. As will be discussed in more detail below, dock 122 allows key 10 to be reconfigured into different types of openers. However, in the first embodiment of the present invention, dock 122 is covered by a plate 115 that matches the curvature of top wall 20. Plate 115 is held in place through the cooperation of a pair of protuberances 142 that are snapped into a pair of indentations 130.

In accordance with another objective of the present invention, a second embodiment of the universal opener or key 116 may include a third opener 120 that allows key 116 to open a third type of security package having yet a different or third type of locking mechanism. Third opener 120 is disposed adjacent first opener 30 and may be integrally formed with body 12. Third opener 120 may be any one of the variety of openers or keys known in the art capable of opening a specific security package. In the second embodiment of universal opener or key 116, third opener 120 is one of the types of openers that functions to magnetically actuate locking elements in the locking mechanism of the third type of security package. Third opener 120 thus allows key 116 to be used to open three different types of security packages. Third opener 120 may be integrally formed in body 12 as discussed above or may be formed separately, or purchased from another source, and then permanently connected to body 12 by an appropriate connector.

In the third embodiment of the present invention, the universal key is indicated by the numeral 118. In this embodiment, third opener 120 is selectively removable from body 12 as depicted in FIG. 5. Key 118 is modular in that it is configured to allow different types of third openers 120 to be selectively connected to key 118. In this embodiment, body 12 includes an opener dock 122 that is formed in top wall 20. A hole 132 is formed in bottom wall 124 that extends entirely through bottom wall 124 and through base 14 of body 12. Hole 132 is sized to accommodate a connector 134 such as a bolt or screw that is adapted to be threadably received in a threaded bore 136 and the bottom of third opener 120 to securely connect third opener 120 to base

12. Third opener 120 may thus be removed from key 118 by removing connector 134 and pulling third opener 120 out of dock 122. Another type of third opener 120 may then be inserted and connected to key 118 by connector 134.

The fourth embodiment of the universal key of the present invention is depicted 5 in FIGS. 7 and 8 and is indicated generally by the numeral 138. Key 138 is configured to selectively receive different types of openers so that key 138 may be selectively customized for use at stores with different types of security packages. Key 138 includes a dock 122 substantially similar to dock 122 of the third embodiment of the universal key. However, dock 122 of the fourth embodiment is provided with an 10 upper wall 140 that may be permanently connected to body 12 of key 138 through the engagement of protuberances 142 on upper wall 140 with indentations 130 that are disposed in bottom wall 124 and rear wall 126. The connection between protuberances 142 and indentations 130 may be substantially permanent or may be a snap-fit connection whereby upper wall 140 may be relatively easily removed from 15 body 12.

Upper wall 140 has a docking hole 144 that is substantially centrally disposed in upper wall 140. Docking hole 144 is sized to snugly receive a third opener 146 that is substantially cylindrical in shape. Third opener 146 is configured to open a third type of security package having a third type of locking mechanism. Third opener 146 20 may be connected to key 138 by an appropriate connector 134 such as the screw depicted in FIG. 8. The arrangement of key 138 allows the retail store utilizing key 138 to purchase multiple third openers 138 that are configured to open different types of security packages. Each key 138 may thus be customized for the department where key 138 is to be used in the retail store. Of course, in addition to third opener 25 146, key 138 also includes first opener 130 and second opener 70 as described above.

The fifth embodiment of the universal opener of the present invention is indicated generally by the numeral 200 in FIGS. 13-26. Universal opener 200 includes first opener 30 and second opener 70 as described above with respect to the

other embodiments of the present invention. The various elements of openers 30 and 70 are identified with the same numbers as above. It should be noted, however, that detent 50 is in the form of a pin similar to pins 88 and that guide rails 108 have been removed with guide rails 110 positioned directly across from grabbers 96. Opener 200 further includes dock 122 that allows different types of third openers to be modularly interchanged with opener 200. In FIG. 13, a cover plate 202 is depicted as being installed in dock 122.

FIG. 13 also depicts an interlock lock mechanism 204 that cooperates with an interlock key (FIG. 22) 206 to selectively lock and unlock each opener 30, 70, and 202 10 (or the third opener disposed in dock 122). An interlock indicator 208 is also depicted in FIG. 13. Interlock indicator 208 provides an indication to the user of opener 200 as to the condition of openers 30, 70, and 202 (or the third opener).

Interlock lock mechanism 204 is shown extending into body 12 of opener 200 in FIG. 15. Lock mechanism 204 is any of a variety of locks known in the art that may 15 be selectively moved from an opened position to a locked position by a key such as key 206. Lock mechanism 204 includes a drive shaft 210 that is selectively rotated between open and closed positions by lock mechanism 204. As shown in FIG. 18, drive shaft 210 has a non-circular cross section so that it may easily form an interference fit with a rotor 212. Thus, key 206 allows lock mechanism 204 to be 20 moved between open and locked positions which drives drive shaft 210 between open and locked positions. This movement causes rotor 212 to move with drive shaft 210 due to the cross section of drive shaft and the matching opening in rotor 212 that receives drive shaft 210. The locked position of rotor 212 is depicted in FIGS. 19, 20, and 21. The open position is depicted in FIGS. 25 and 26.

25 Rotor 212 includes a slot 214 formed in its outer wall 216 such that slot 214 terminates in a pair of opposed drive surfaces 218 and 220. Rotor 212 further includes a drive pin 222 extending out from outer wall 216. Slot 214 and drive surfaces 218 and 220 function to move a first interlock 224 between open and locked

positions while drive pin 222 functions to move a second interlock 226 between open and locked positions.

First interlock 224 is depicted in FIGS. 23 and 24 and includes a body 228 from which extends a dog 230 that is sized and configured to fit within slot 214 and engage 5 drive surfaces 218 and 220 as rotor 212 is rotated between the open and locked positions. A first lock pin 232 extends out from body 228 substantially perpendicular to dog 230. First lock pin 232 is sized and has a length such that it extends into slot 72 of second opener 70 when first interlock 224 is in the locked position. In this position, first lock pin 232 blocks slot 72 and prevents security device 84 from 10 engaging pins 88. As such, security device 84 cannot be unlocked with second opener 70. First lock pin 232 is sized and has a length to be withdrawn from slot 72 when first interlock 224 is in the open position depicted in FIG. 25.

First interlock 224 further includes a magnet 234 that is used with first opener 30 in cooperation with detent or pin 50. In FIG. 14, first interlock 224 is in the open 15 position with magnet 234 closely adjacent rear wall 36 of first opener 30 so that magnet 234 provides a magnetic force to first opener 30. This is necessary because some embodiments of security device 44 include a magnetic and mechanical locking mechanism that require both detent 50 and magnet 234 to open them. Magnet 234 is sized and has a strength such that it will open the locking mechanism of security 20 device 44 when it is in the open position closely adjacent rear wall 36 depicted in FIG. 14 but lacks the strength to open the locking mechanism of security device 44 when in the locked position depicted in FIGS. 19 and 20. Magnet 234 moves back and forth with first interlock 224. First interlock 224 rides in a slot 236 formed between a pair of rails 238 in body 12. First interlock 224 includes a raised guide 240 sized to fit 25 snugly within slot 236 and provide smooth movement to first interlock 224 between the open and locked positions. A pair of color plates 242 are disposed on raised guide 240 in a position where they cooperate with interlock indicator 208 to be selectively visible to the user of opener 200. Color plates 242 are different colors such as red and green with only one plate 242 visible through indicator 208 at a time.

For instance, when opener 200 is in a locked position, red color plate 242 may be visible through indicator 208 telling the user of opener 200 that opener 200 is in a locked position. When opener 200 is moved to the open position, green color plate 242 may be viewed through indicator 208 as shown in FIG. 25. Interlock 224 and 5 color plates 242 are moved back and forth between the open and locked positions by rotation of rotor 212. When rotor 212 is rotated, drive surfaces 218 and 220 selectively engage dog 230 to move first interlock 224.

Second interlock 226 extends between interlock lock mechanism 204 and dock 122 or third opener 250 (FIG. 17). Second interlock 226 works in cooperation with a 10 hook 252 that extends from cover plate 202 or third opener 250. Hook 252 is selectively engaged by second interlock 226 to prevent cover plate 202 or third opener 250 from being removed from opener 200. This engagement is achieved by providing second interlock 226 with a locking hook 254 that is moved between the open and locked position through the engagement of a drive head 256 with drive pin 15 222 of rotor 212. Drive pin 222 is disposed in a slot 258 formed in drive head 256 such that rotation of drive pin 222 results in lateral translational movement of second interlock 226. Second interlock 226 is moved between the locked position depicted in FIG. 21 and the open position depicted in FIG. 26 by selective rotation of key 206 and rotor 212.

20 Third opener 250 depicted in FIG. 17 includes a slot 260 with a magnet 262 disposed directly beneath slot 260. Third opener 250 is received in opener 200 substantially similar to the modular openers described above and is held in place with a bolt or screw 264. Third opener 250 is intended to be used with security devices having a width substantially the same as the width of slot 260 and having a locking mechanism that is opened by sliding it over magnet 262.

It may now be understood that first opener 30, second opener 70, and third opener 250 (or cover plate 202) may be locked in an unusable position (or an unremovable position) by the movement of key 206 in interlock 204. Movement of key 206 from the open position to the locked position drives pin 232 into slot 272,

moves magnet 234 to a position where its force is rendered inoperable to opener 30, and moves interlock 226 to a locked position where third opener 250 (or cover plate 202) cannot be removed from opener 200. It may also be understood that the user of opener 200 may conveniently determine the status of opener 200 by looking 5 through indicator 208 to see which color plate 242 is disposed in indicator 208.

Accordingly, the improved magnetic and mechanical universal key for security containers is simplified, provides an effective, safe, inexpensive, and efficient device which achieves all the enumerated objectives, provides for eliminating difficulties encountered with prior devices, and solves problems and obtains new results in the 10 art.

In the foregoing description, certain terms have been used for brevity, clearness and understanding; but no unnecessary limitations are to be implied therefrom beyond the requirement of the prior art, because such terms are used for descriptive purpose and are intended to be broadly construed.

15 Moreover, the description and illustration of the invention is by way of example, and the scope of the invention is not limited to the exact details shown or described.

Having now described the features, discoveries and principles of the invention, the manner in which the improved magnetic and mechanical universal key for security containers is constructed and used, the characteristics of the construction, and the 20 advantageous, new and useful results obtained, the new and useful structures, devices, elements, arrangements, parts and combinations, are set forth in the appended claims.

CLAIMS

1. A key for opening at least two different types of security devices; the key comprising:

5 a body defining a slot;

the body further defining a bottom wall and a rear wall extending upwardly from the bottom wall;

a first opener being defined by the bottom and rear wall of the body;

the first opener including a detent extending up from the bottom wall; and

10 a second opener carried by the body; the second opener being at least partially disposed in the slot; and

the second opener including a pair of spaced unlocking pins disposed in the slot.

15 2. The key of claim 1, wherein the rear wall includes an offset wall and an angled wall; the angled wall connecting the offset wall to the rear wall.

3. The key of claim 1, wherein the unlocking pins in the slot are disposed apart a distance in the range of 3½ to four inches.

20

4. The key of claim 1, further comprising a first grabber extending into the slot.

5. The key of claim 4, further comprising a second grabber extending into the slot; the second grabber being spaced from the first grabber.

25

6. The key of claim 5, wherein each of the grabbers are disposed intermediate the pair of unlocking pins.

7. The key of claim 4, wherein the grabber includes a head and a spring; the head being biased toward the slot by the spring.
8. The key of claim 1, wherein the body defines a front wall of the slot and a rear wall 5 of the slot; the first grabber extending through the front wall of the slot; the key further including a magnet disposed adjacent the rear wall of the slot.
9. The key of claim 1, further comprising a first magnet disposed adjacent the slot.
- 10 10. The key of claim 9, further comprising a second magnet disposed adjacent the rear wall of the body.
11. The key of claim 1, wherein the body includes a dock that is configured to selectively receive a third opener.
15
12. The key of claim 11, further comprising a third opener removably disposed in the opener dock.
13. The key of claim 11, further comprising a plate covering the dock.
20
14. The key of claim 1, further comprising an interlock mechanism that selectively locks and unlocks each opener.
15. The key of claim 14, wherein the interlock mechanism includes a first interlock 25 that moves a magnet and at least one lock pin that extends into the slot of the second opener.
16. The key of claim 14, further comprising an indicator adapted to visually indicate the position of the interlock mechanism.

17. A key for opening at least two different types of security devices; the key comprising:

- a body defining a slot;
- the body including a front wall and a rear wall that define a portion of the slot;
- 5 the body further defining a bottom wall and a rear wall extending upwardly from the bottom wall;
- a first opener being defined by the bottom and rear wall of the body;
- the first opener including a detent extending up from the bottom wall;
- 10 the first opener further including a first magnet disposed adjacent the detent;
- the rear wall being disposed intermediate the first magnet and the detent;
- a second opener carried by the body; the second opener being at least partially disposed in the slot;
- the second opener including a pair of spaced unlocking pins disposed in the slot;
- 15 the second opener further including a second magnet disposed adjacent each of the unlocking pins; and
- one of the front and rear walls defining a portion of the slot being disposed intermediate the unlocking pins and the second magnet.

20 18. The key of claim 17, further comprising a grabber disposed at least partially in the slot.

19. A key for opening at least two different types of security devices; the key comprising:

- 25 a body;
- the body further defining a bottom wall and a rear wall extending upwardly from the bottom wall;
- a first opener being defined by the bottom and rear wall of the body;
- the first opener including a detent extending up from the bottom wall;

- the first opener further including a first magnet disposed adjacent the detent; the rear wall being disposed intermediate the first magnet and the detent;
- a second opener carried by the body;
- the second opener including a pair of spaced unlocking pins;
- 5 the second opener further including a second magnet disposed adjacent each of the unlocking pins.
20. The key of claim 19, wherein the unlocking pins in the slot are disposed apart a distance in the range of 3½ to four inches.

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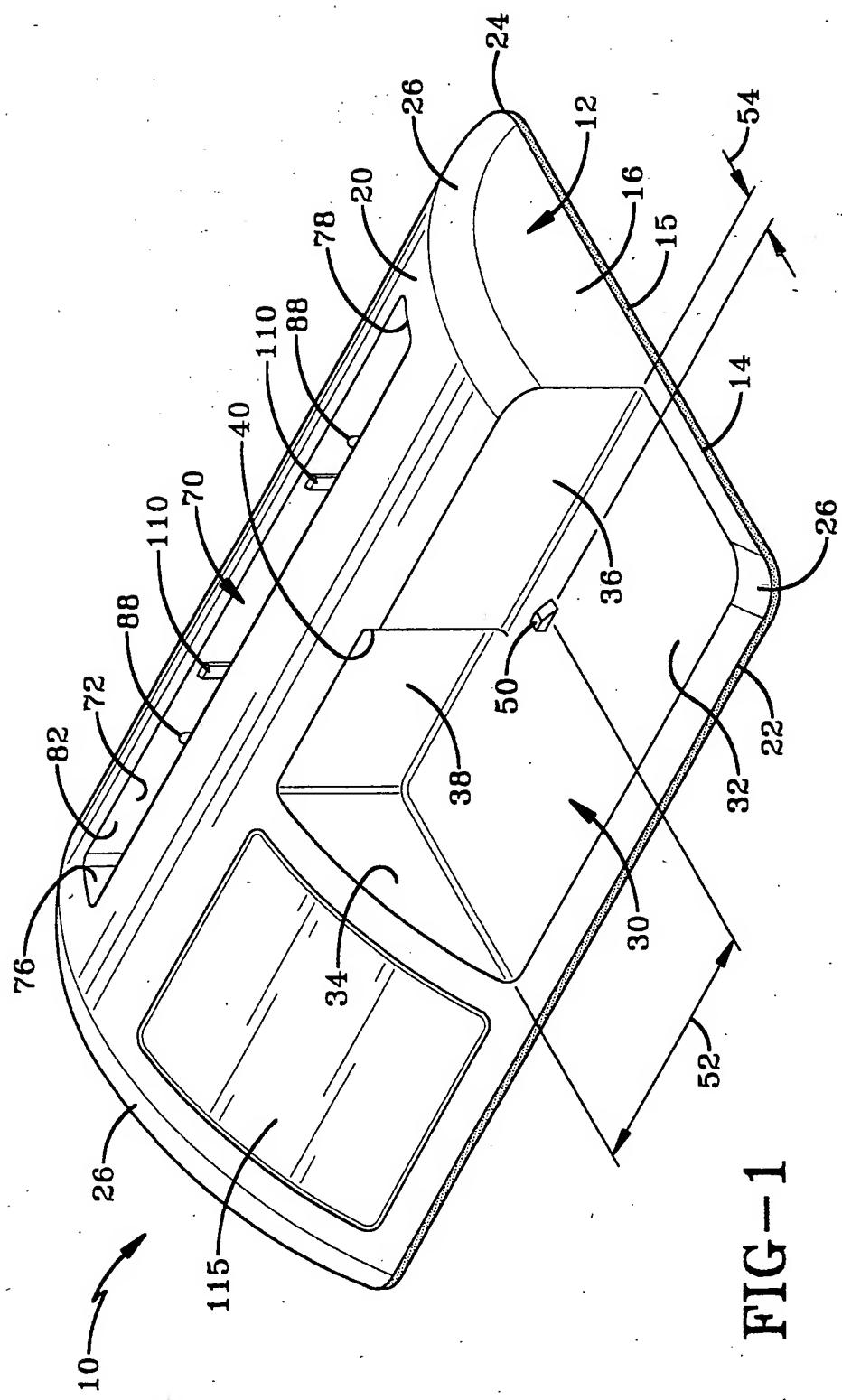
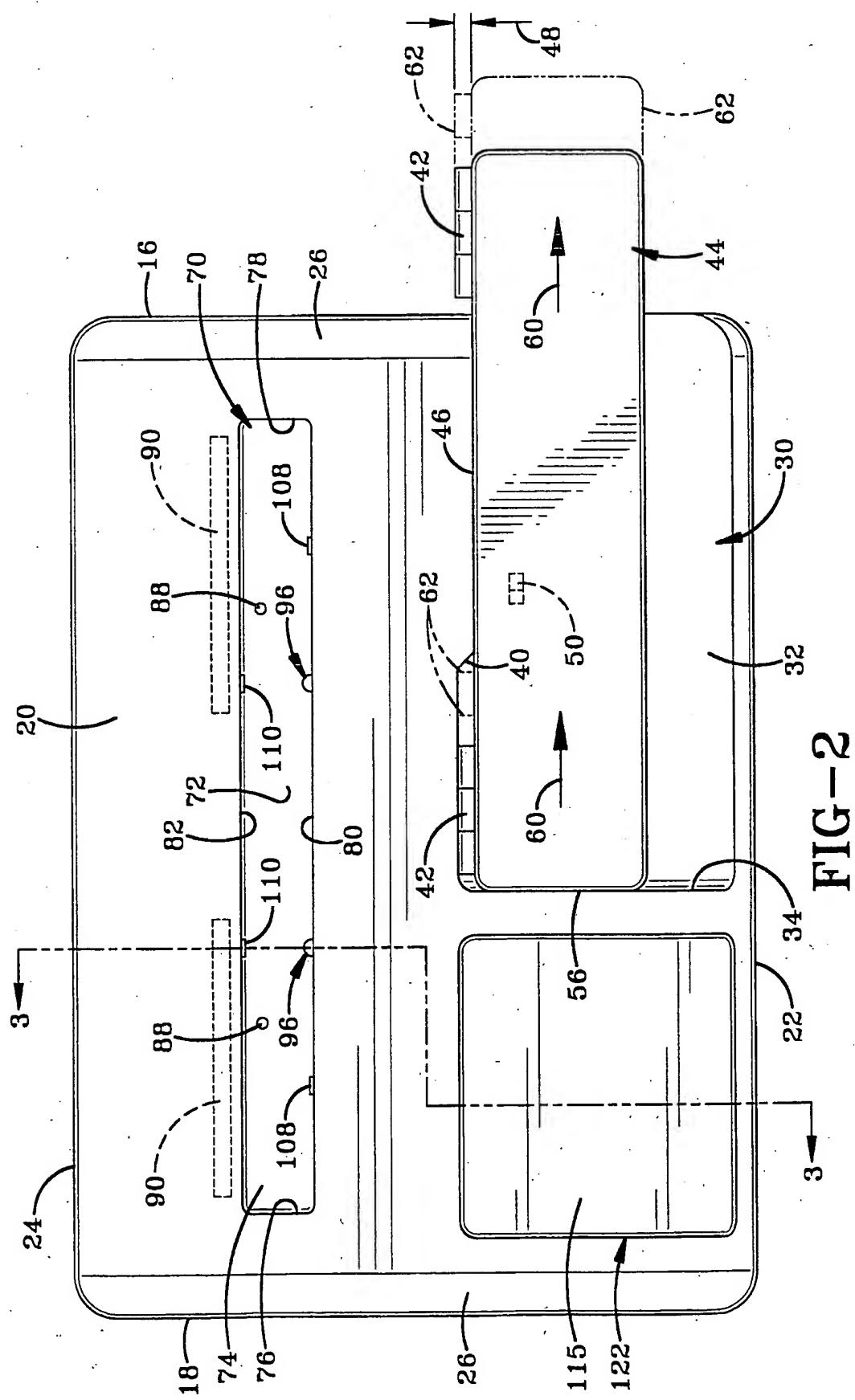
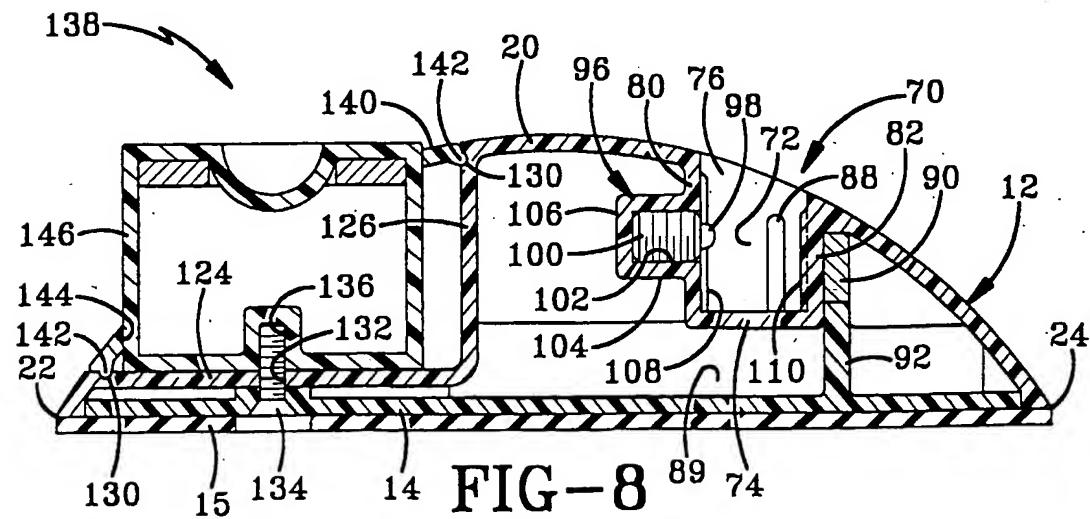
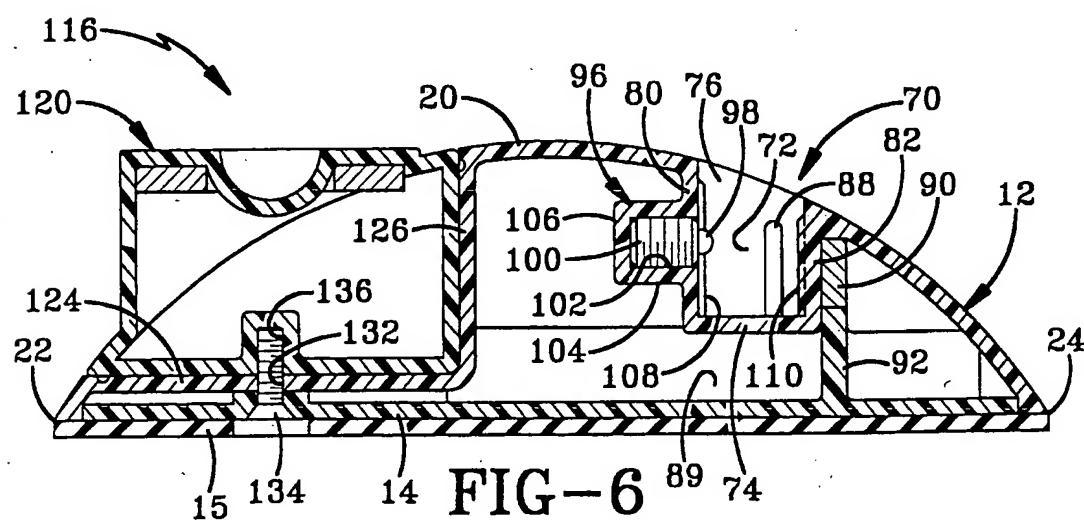
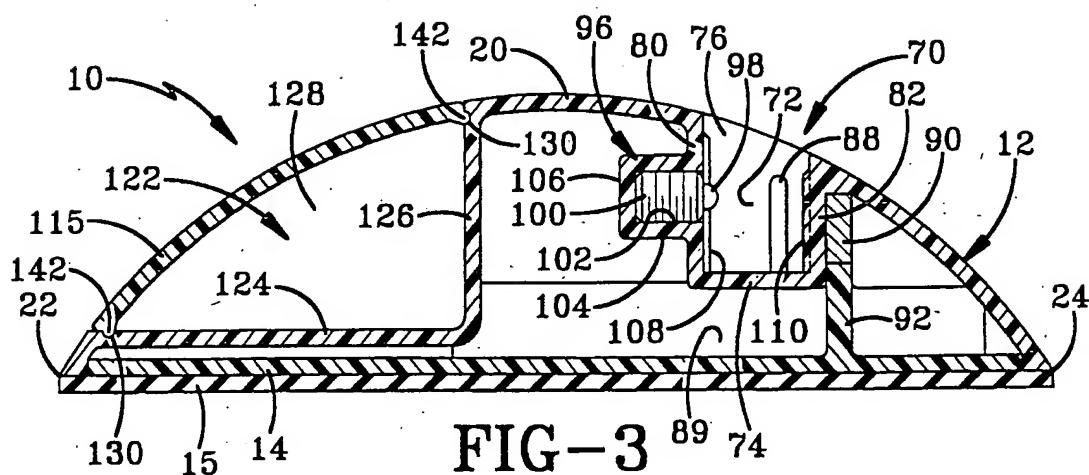


FIG-1

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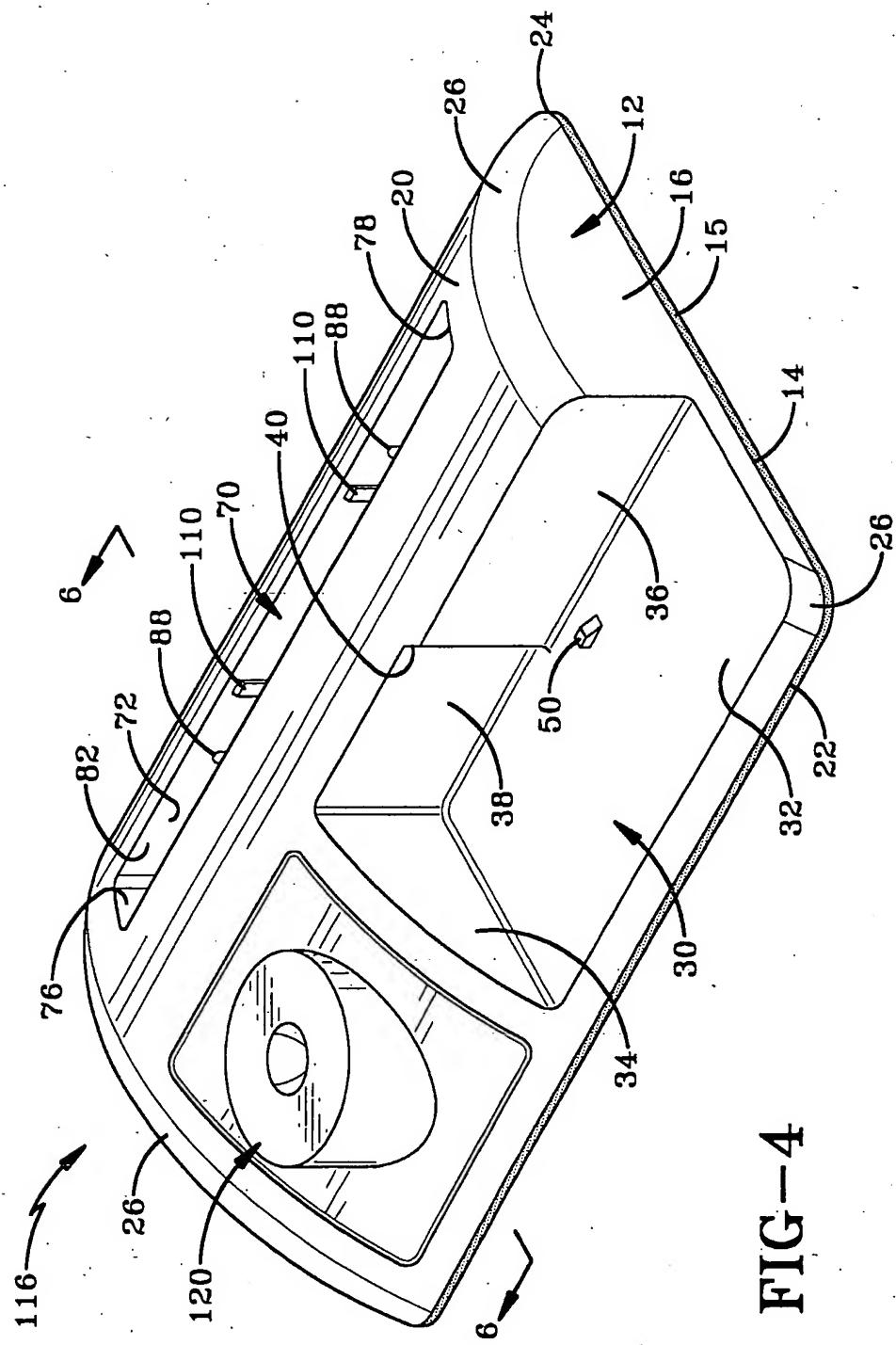


FIG-4

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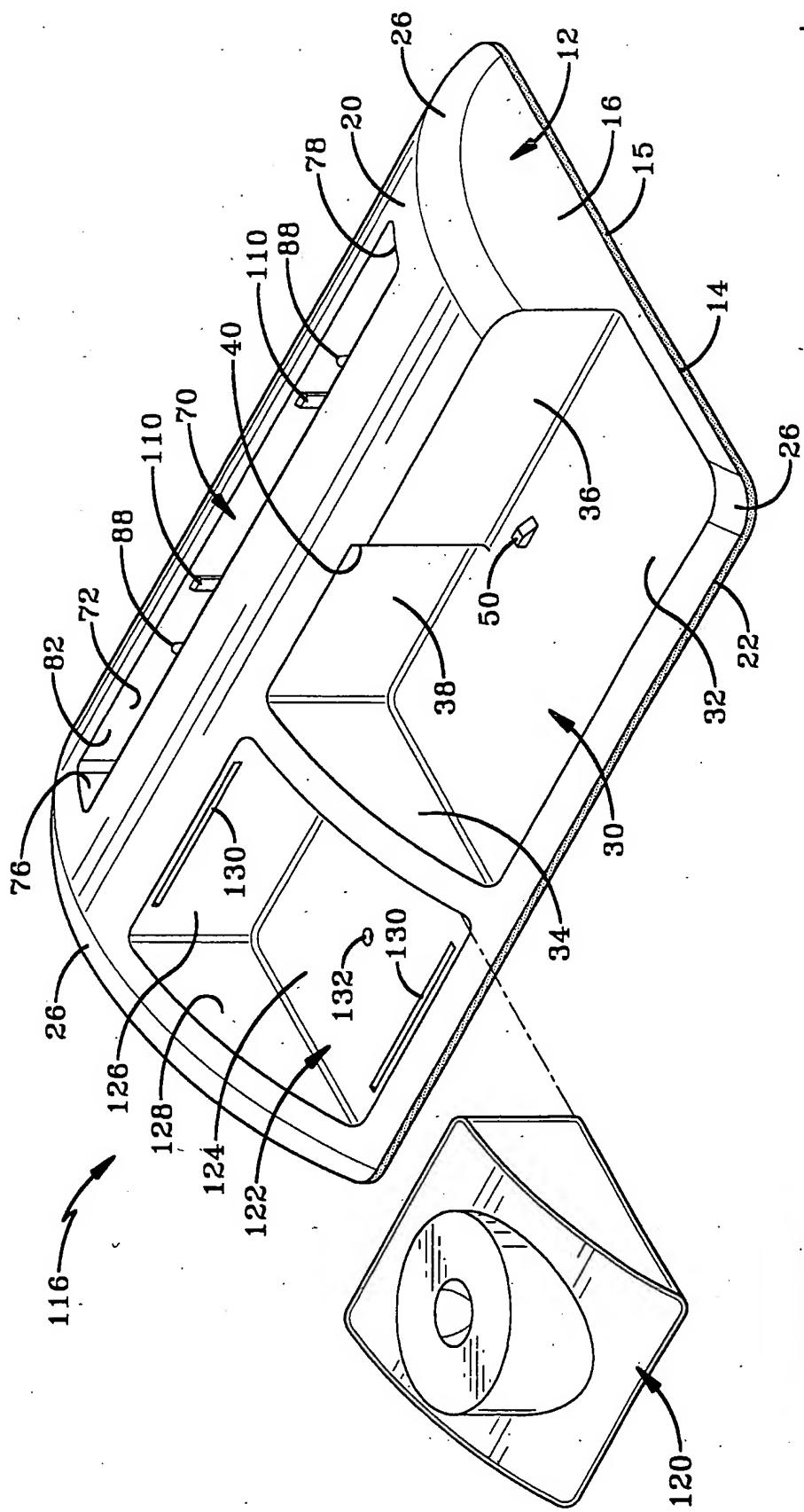


FIG-5

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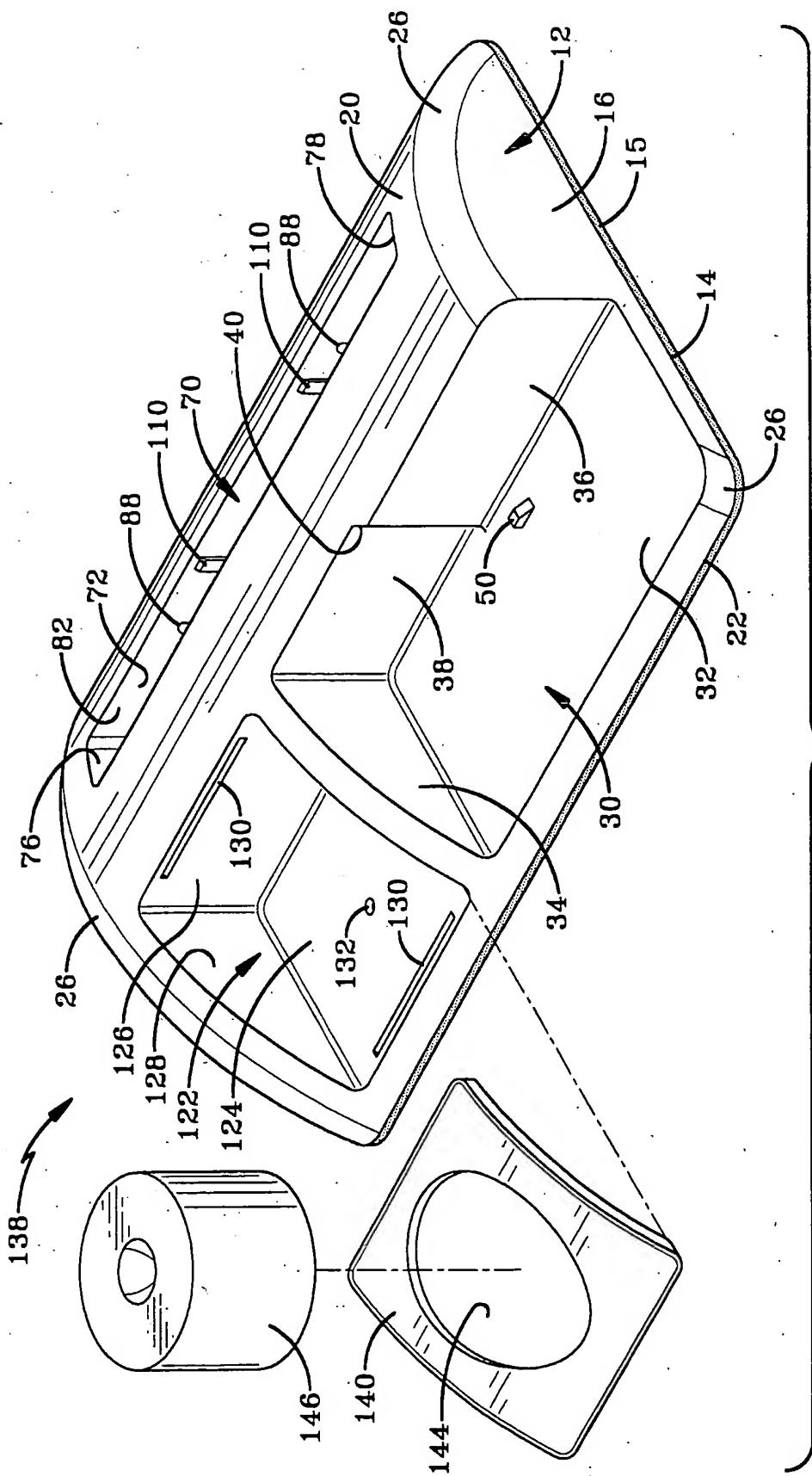


FIG-7

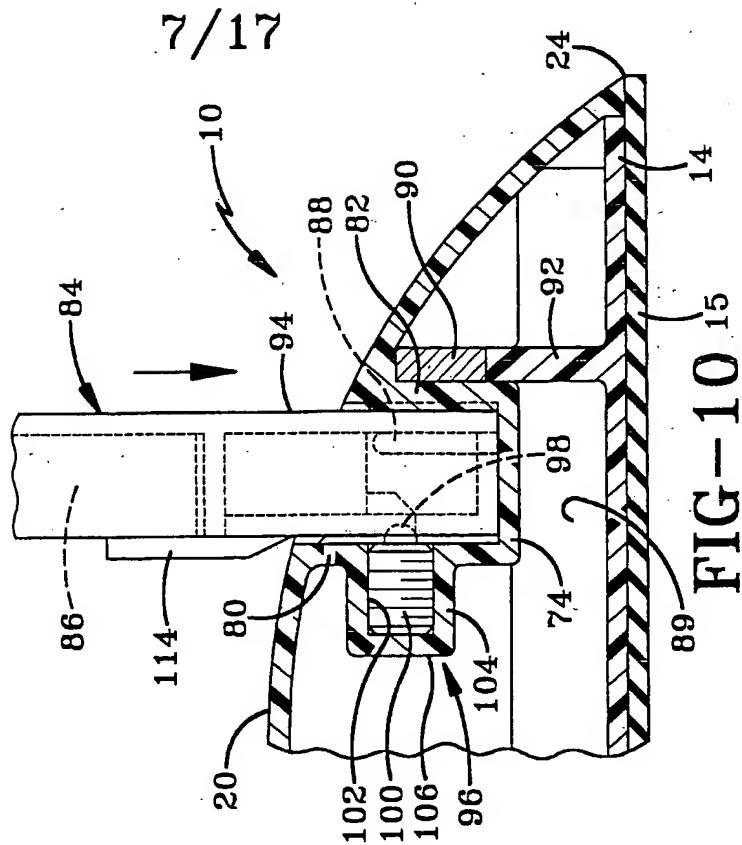


FIG-10

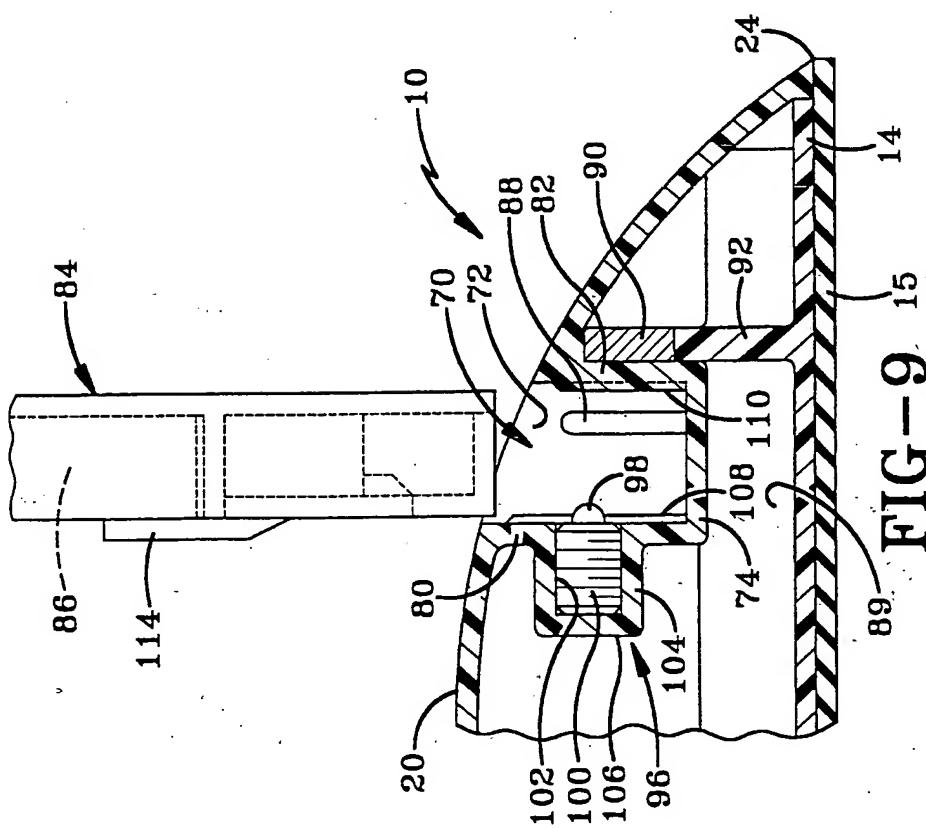


FIG-9

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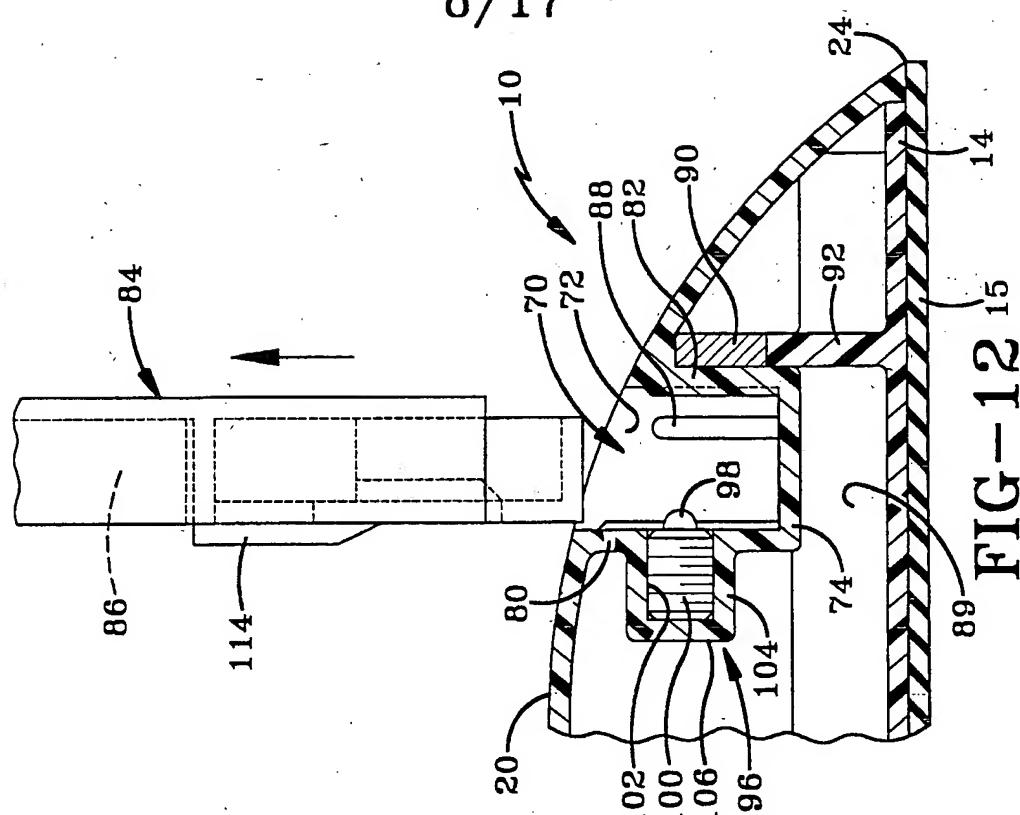


FIG-12 15

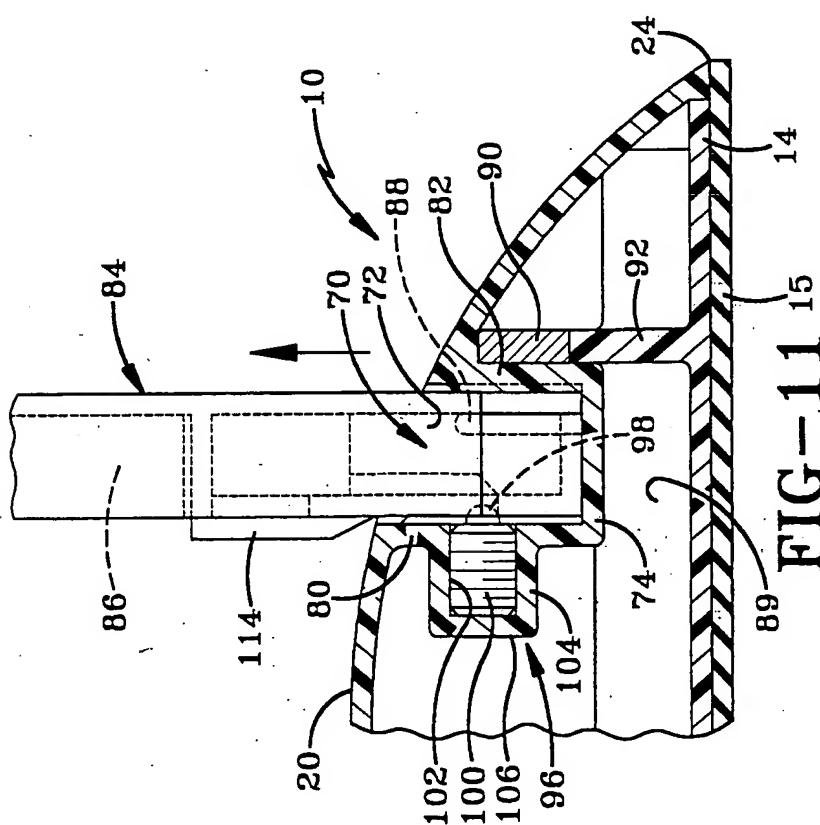


FIG-11 15

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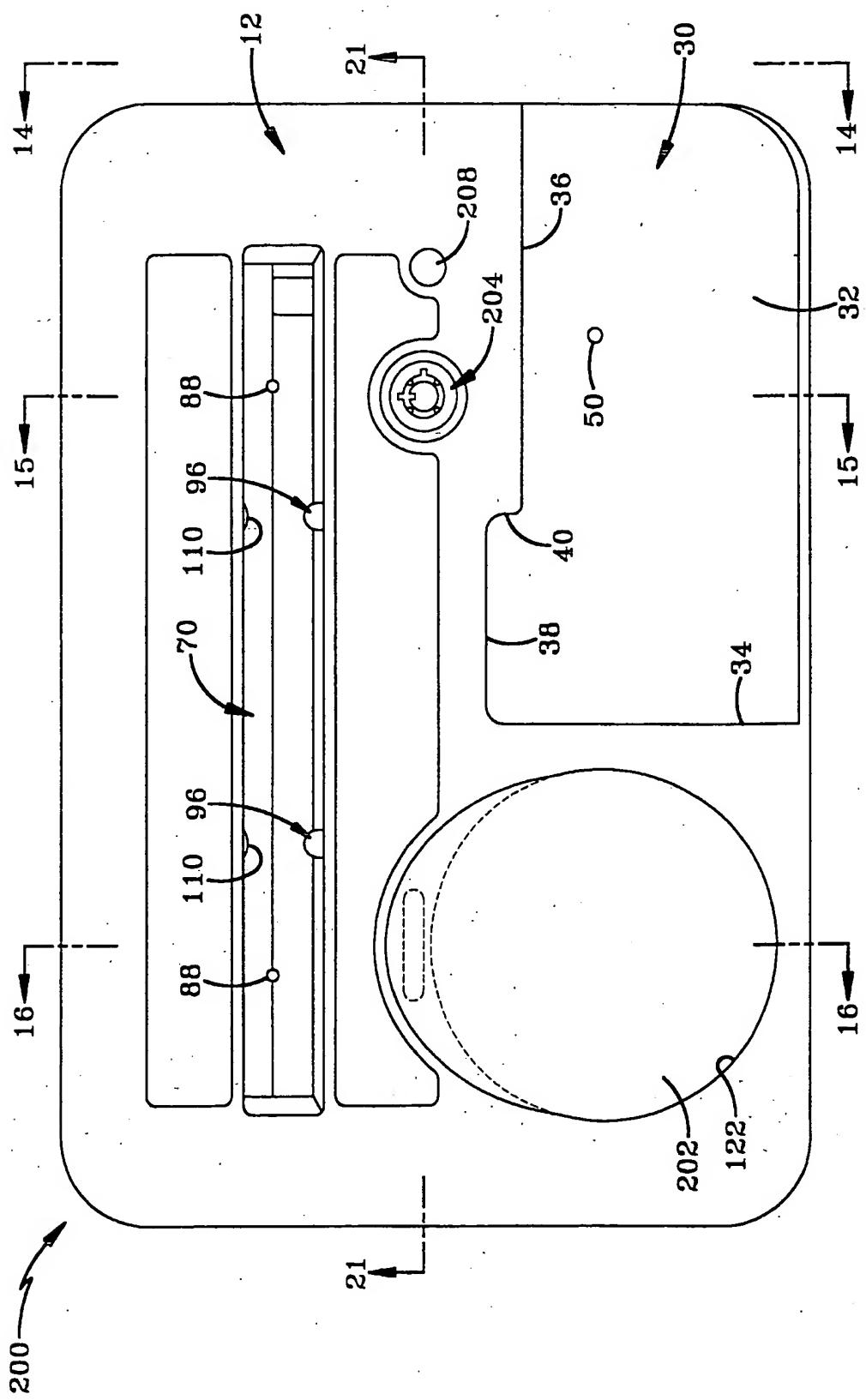
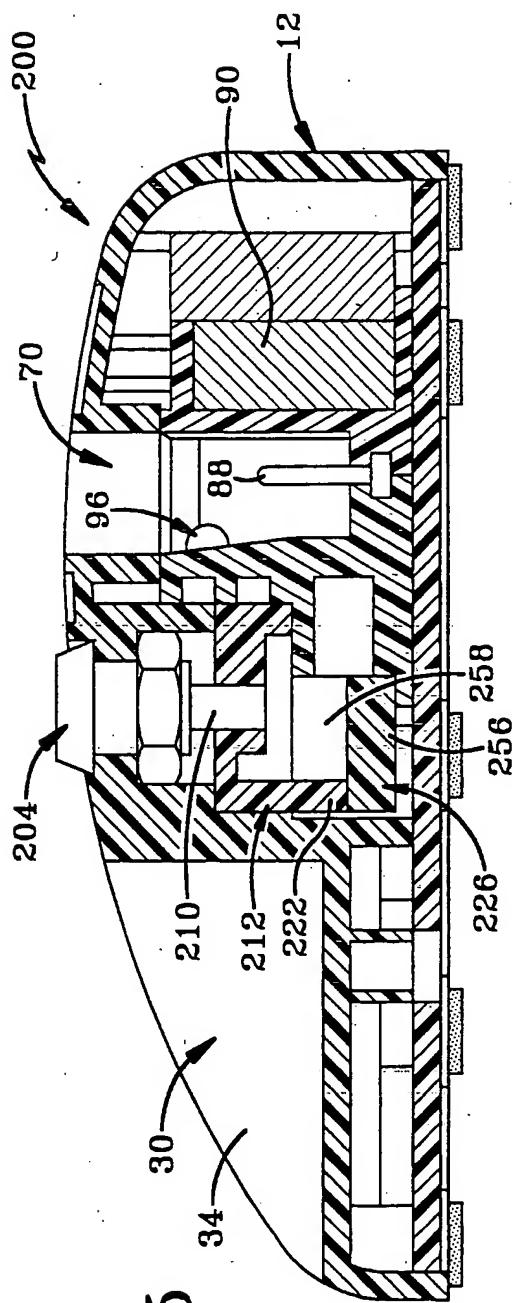
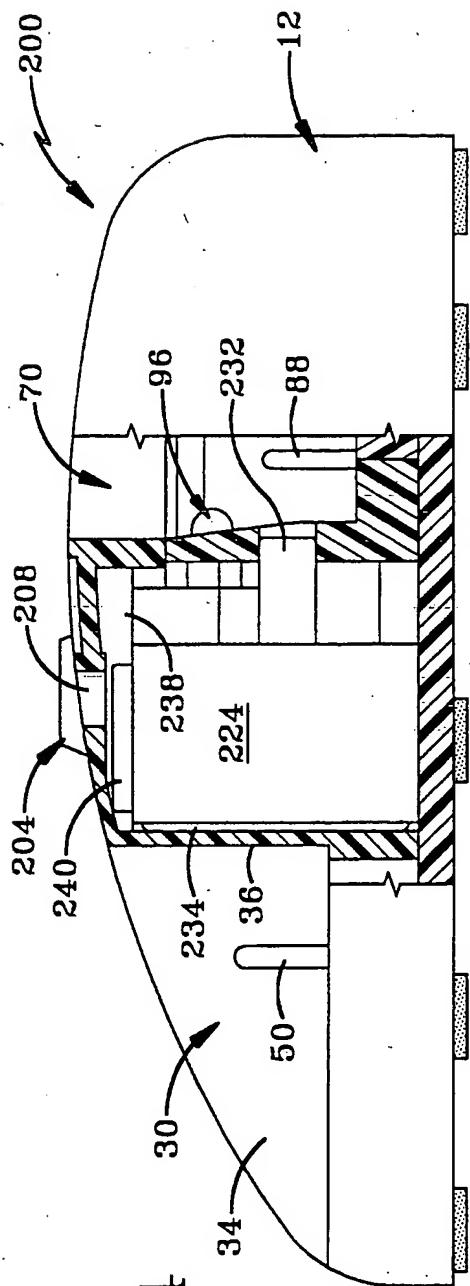


FIG-13

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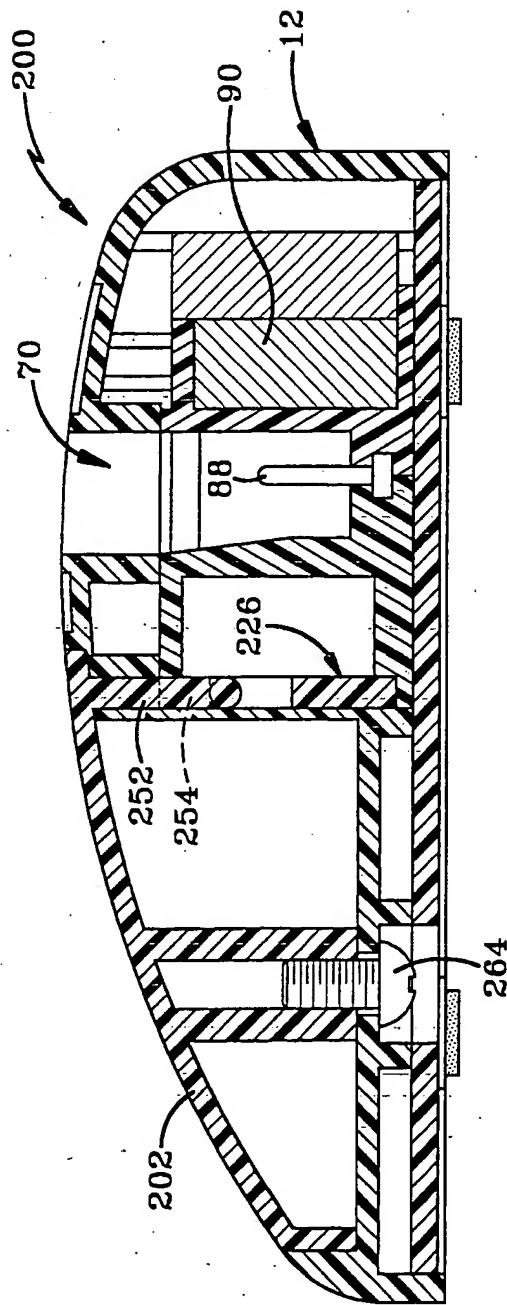


FIG-16

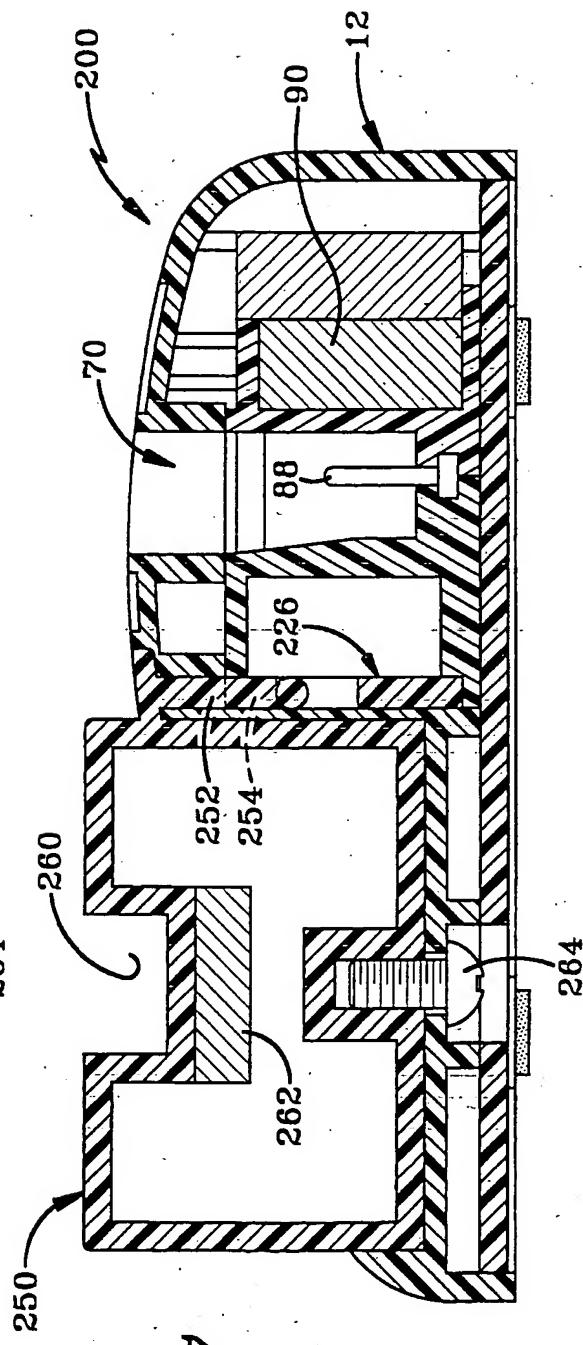


FIG-17

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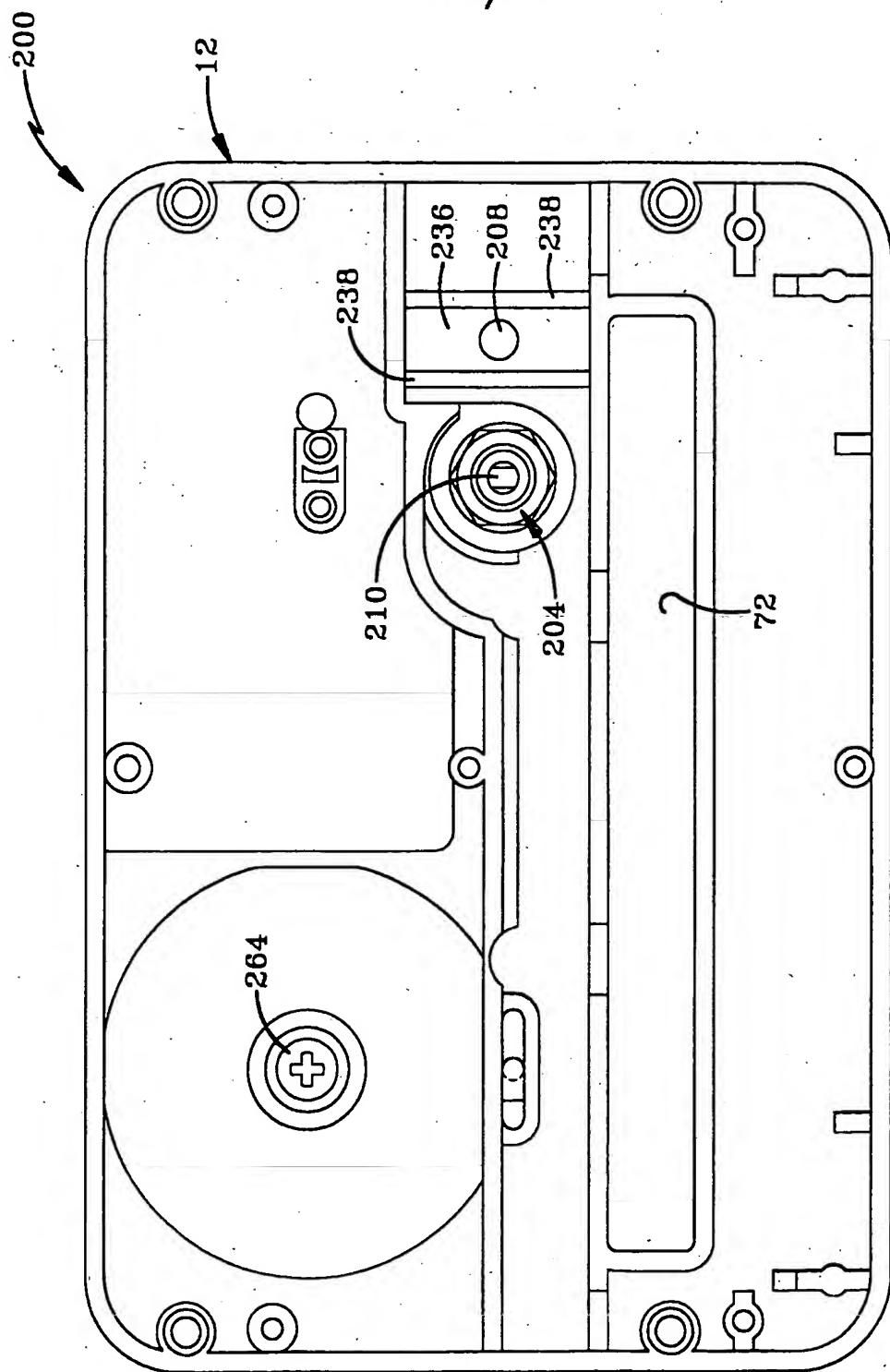


FIG-18

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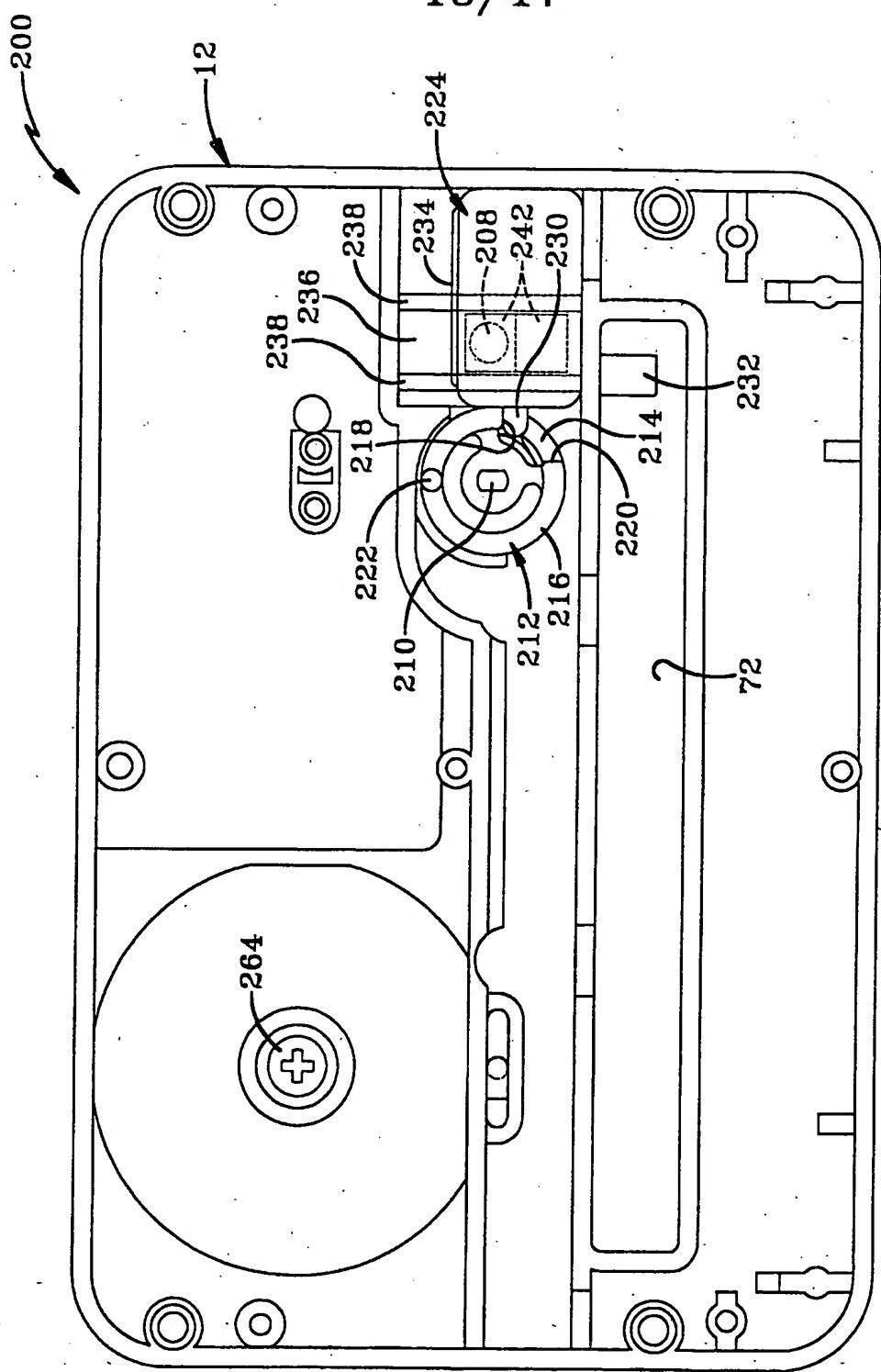


FIG - 19

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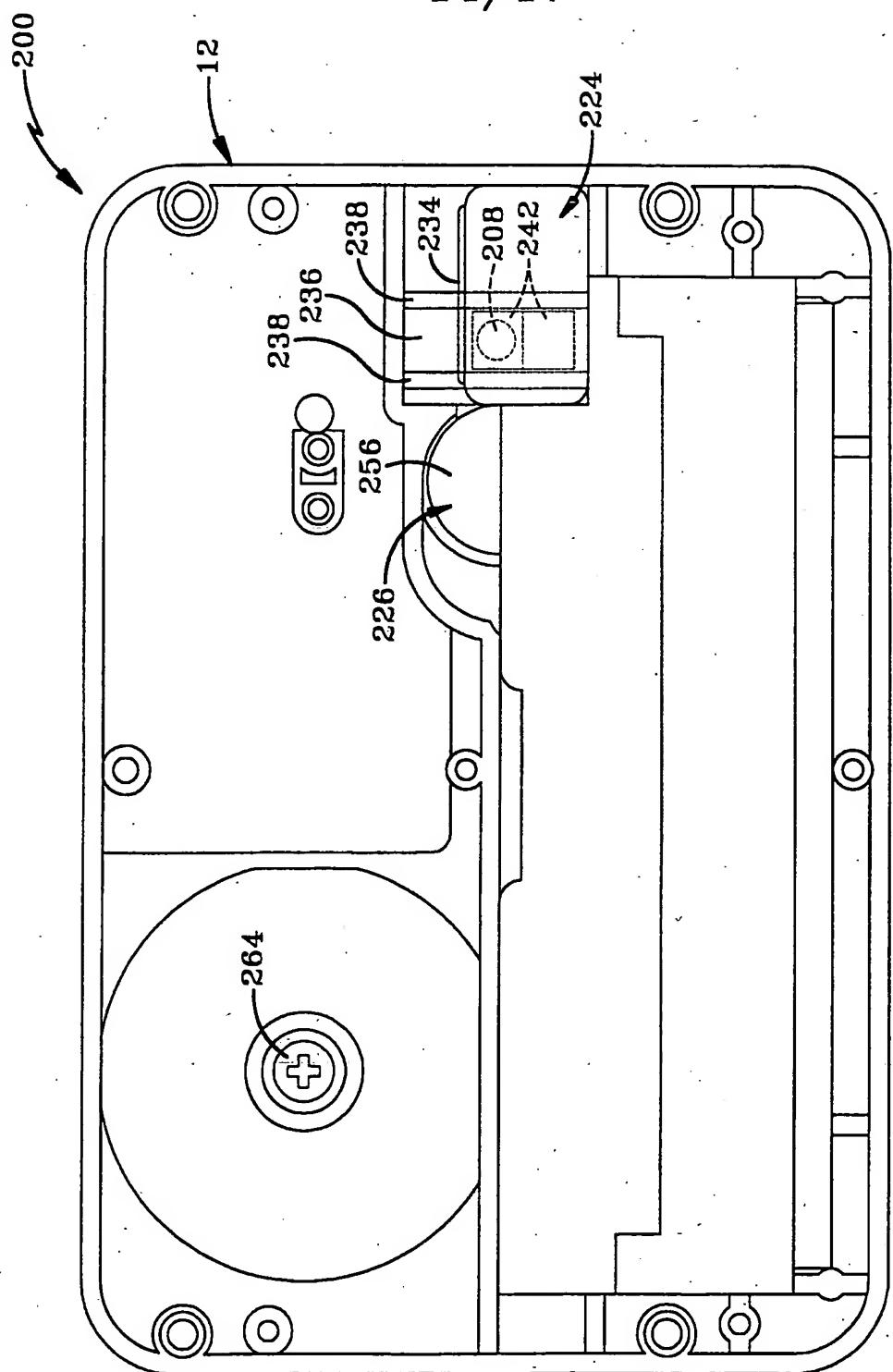


FIG-20

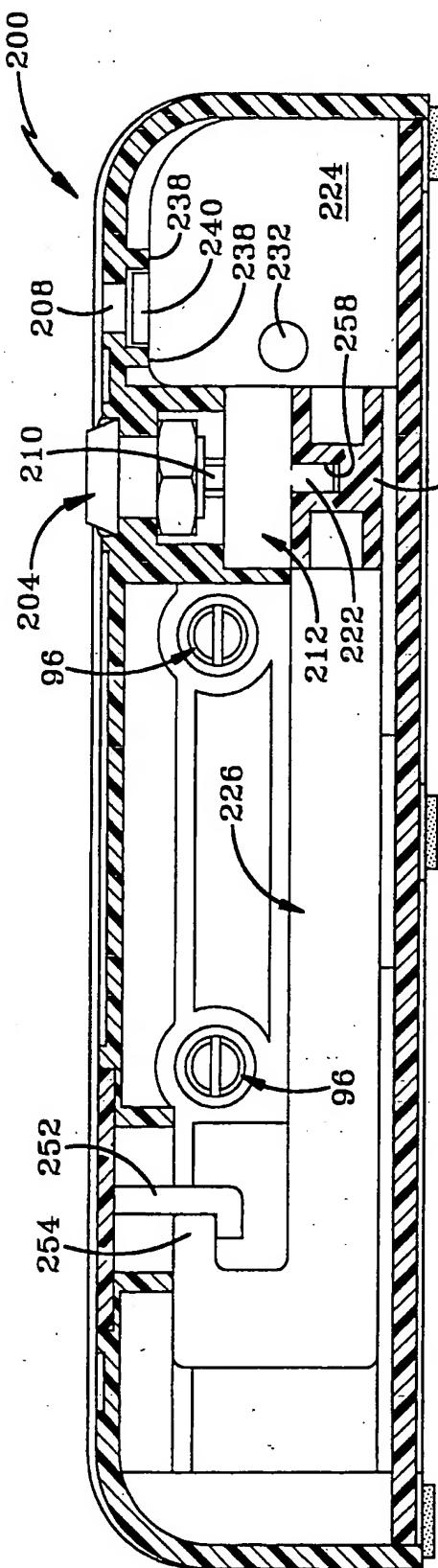


FIG-21

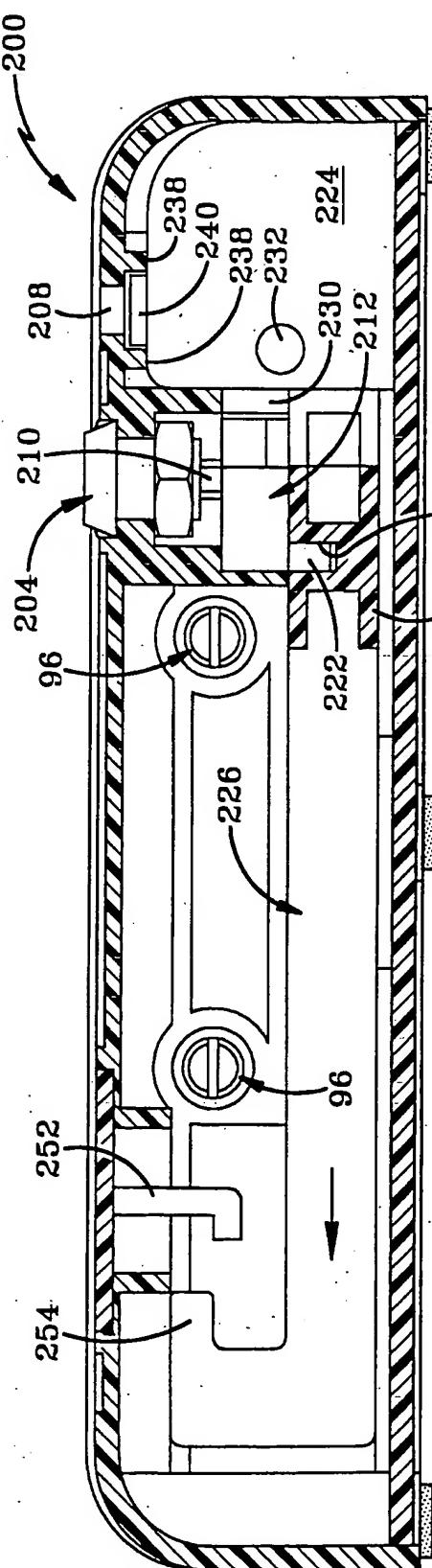


FIG-26

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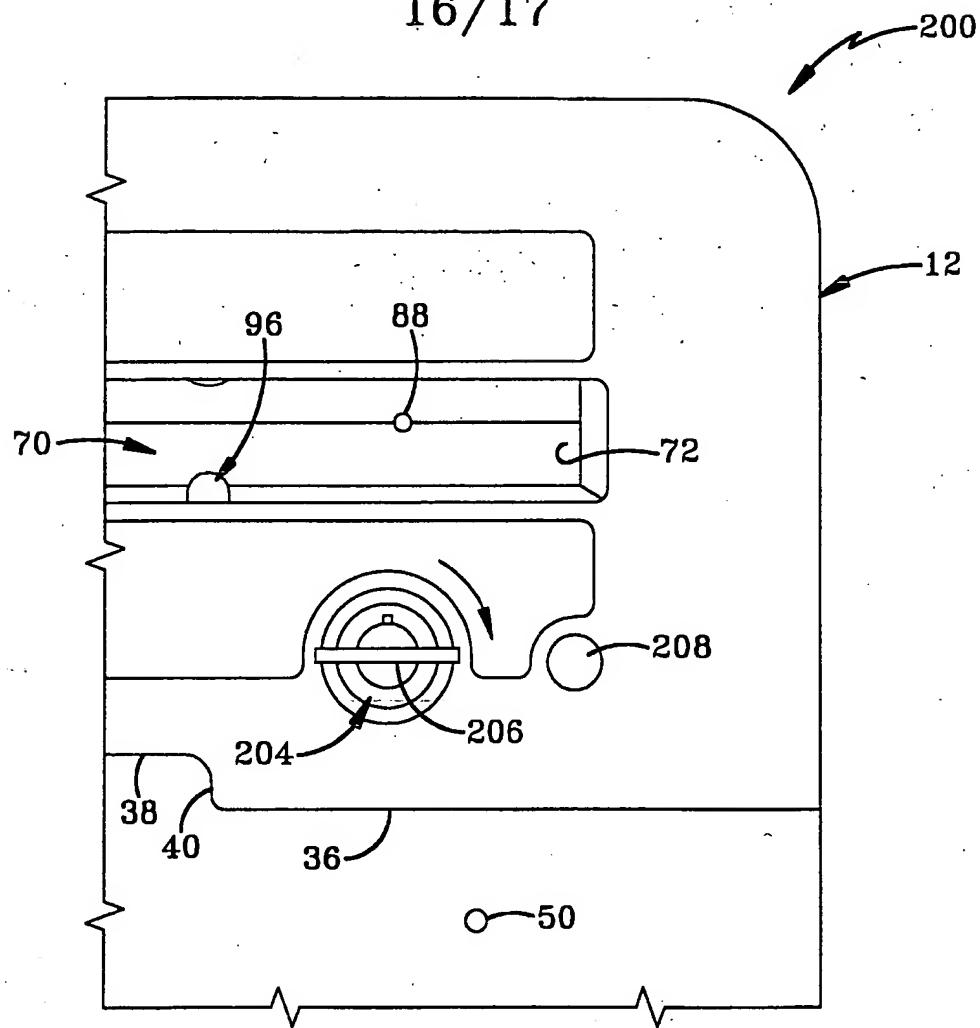


FIG-22

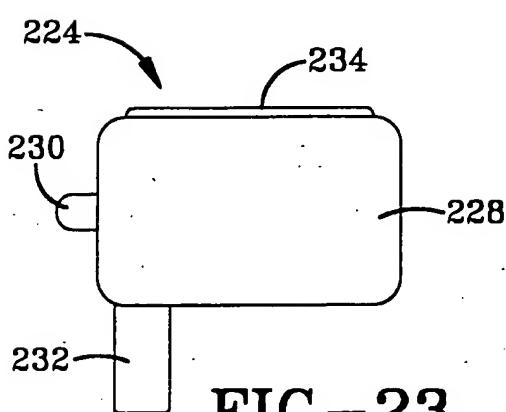


FIG-23

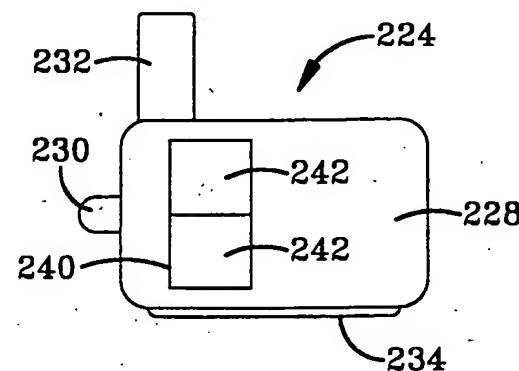


FIG-24

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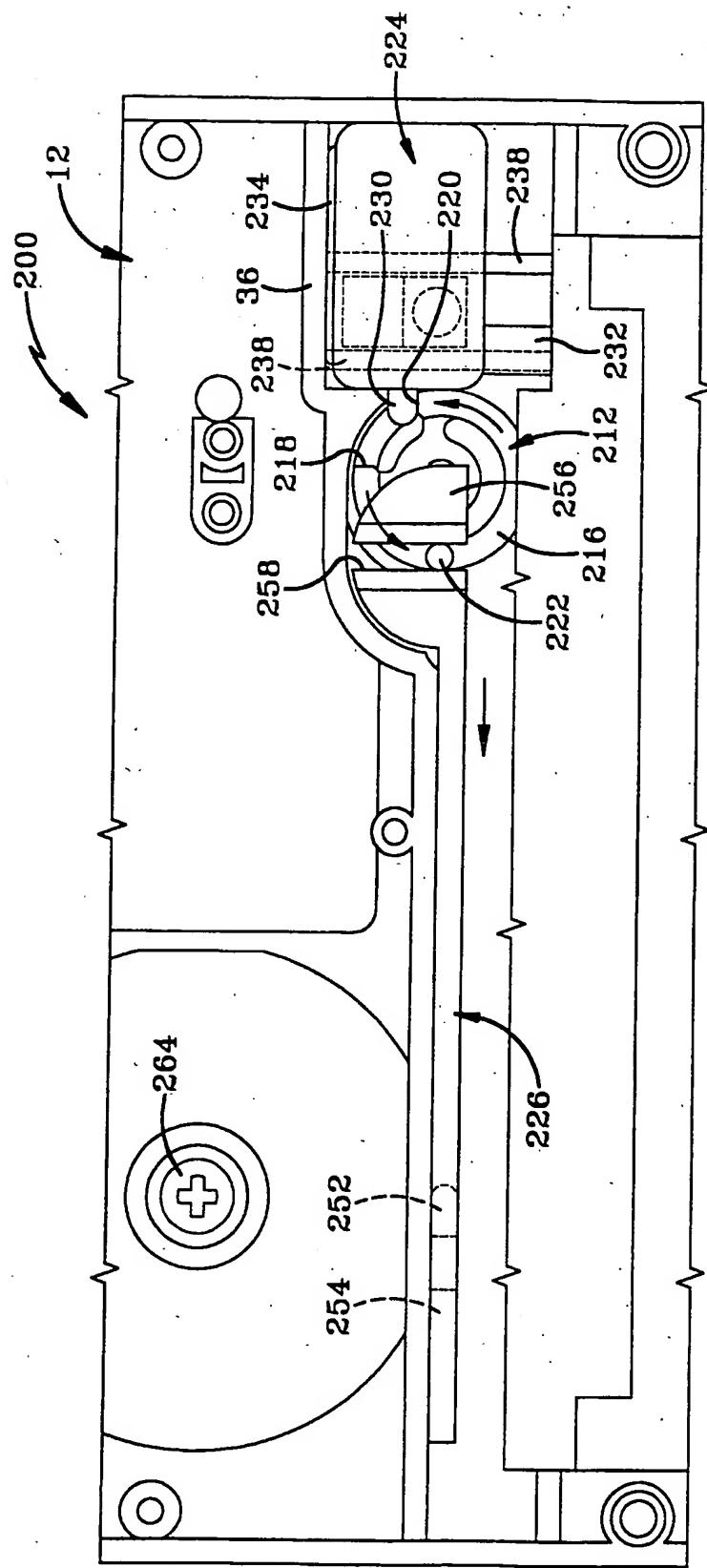


FIG-25